

$$E_{\text{CO}_2\text{PV}} = (\text{GA} - \text{H}_w - \text{BA} - \text{WT}) \times (44/12) \quad (\text{Eq. F-7})$$

Where:

$E_{\text{CO}_2\text{PV}}$ = Annual CO_2 emissions from pitch volatiles combustion (metric tons CO_2).

GA = Initial weight of green anodes (metric tons).

H_w = Annual hydrogen content in green anodes (metric tons).

BA = Annual baked anode production (metric tons).

WT = Annual waste tar collected (metric tons).

44/12 = Ratio of molecular weights, CO_2 to carbon.

(2) Use Equation F-8 of this section to calculate emissions from bake furnace packing material.

$$E_{\text{CO}_2\text{PC}} = \text{PCC} \times \text{BA} \times \left(\left[100 - \text{S}_{\text{pc}} - \text{Ash}_{\text{pc}} \right] / 100 \right) \times (44/12) \quad (\text{Eq. F-8})$$

Where:

$E_{\text{CO}_2\text{PC}}$ = Annual CO_2 emissions from bake furnace packing material (metric tons CO_2).

PCC = Annual packing coke consumption (metric tons/metric ton baked anode).

BA = Annual baked anode production (metric tons).

S_{pc} = Sulfur content in packing coke (percent weight).

Ash_{pc} = Ash content in packing coke (percent weight).

44/12 = Ratio of molecular weights, CO_2 to carbon.

(g) If process CO_2 emissions from anode consumption during electrolysis or anode baking of prebake cells are vented through the same stack as any combustion unit or process equipment that reports CO_2 emissions using a CEMS that complies with the Tier 4 Calculation Methodology in subpart C of this part (General Stationary Fuel Combustion Sources), then the calculation methodology in paragraphs (d) and (e) of this section shall not be used to calculate those process emissions. The owner or operation shall report under this subpart the combined stack emissions according to the Tier 4 Calculation Methodology in § 98.33(a)(4) and all associated requirements for Tier 4 in subpart C of this part (General Stationary Fuel Combustion Sources).

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 79155, Dec. 17, 2010]

§ 98.64 Monitoring and QA/QC requirements.

(a) Effective December 31, 2010 for smelters with no prior measurement or effective December 31, 2012, for facilities with historic measurements, the smelter-specific slope coefficients, overvoltage emission factors, and weight fractions used in Equations F-2, F-3, and F-4 of this subpart must be measured in accordance with the recommendations of the EPA/IAI Protocol for Measurement of Tetrafluoromethane (CF_4) and Hexafluoroethane (C_2F_6) Emissions from Primary Aluminum Production (2008) (incorporated by reference, see § 98.7), except the minimum frequency of measurement shall be every 10 years unless a change occurs in the control algorithm that affects the mix of types of anode effects or the nature of the anode effect termination routine. Facilities which operate at less than 0.2 anode effect minutes per cell day or operate with less than 1.4mV anode effect overvoltage can use either smelter-specific slope coefficients or the technology specific default values in Table F-1 of this subpart.

(b) The minimum frequency of the measurement and analysis is annually except as follows:

(1) Monthly for anode effect minutes per cell day (or anode effect overvoltage and current efficiency).

(2) Monthly for aluminum production.

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(3) Smelter-specific slope coefficients, overvoltage emission factors, and weight fractions according to paragraph (a) of this section.

(c) Sources may use either smelter-specific values from annual measurements of parameters needed to complete the equations in § 98.63 (e.g., sulfur, ash, and hydrogen contents) or the default values shown in Table F-2 of this subpart.

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§ 98.65 Procedures for estimating missing data.

A complete record of all measured parameters used in the GHG emissions

calculations is required. Therefore, whenever a quality-assured value of a required parameter is unavailable (e.g., if a meter malfunctions during unit operation or if a required sample measurement is not taken), a substitute data value for the missing parameter shall be used in the calculations, according to the following requirements:

(a) Where anode or paste consumption data are missing, CO₂ emissions can be estimated from aluminum production per Equation F-8 of this section.

$$ECO_2 = EF_p \times MP_p + EF_s \times MP_s \quad (\text{Eq. F-8})$$

Where:

ECO₂ = CO₂ emissions from anode and/or paste consumption, metric tons CO₂.

EF_p = Prebake technology specific emission factor (1.6 metric tons CO₂/metric ton aluminum produced).

MP_p = Metal production from prebake process (metric tons Al).

EF_s = Søderberg technology specific emission factor (1.7 metric tons CO₂/metric ton Al produced).

MP_s = Metal production from Søderberg process (metric tons Al).

(b) For other parameters, use the average of the two most recent data points after the missing data.

[74 FR 56374, Oct. 30, 2009, as amended at 75 FR 79156, Dec. 17, 2010]

§ 98.66 Data reporting requirements.

In addition to the information required by § 98.3(c), you must report the following information at the facility level:

(a) Annual aluminum production in metric tons.

(b) Type of smelter technology used.

(c) The following PFC-specific information on an annual basis:

(1) Perfluoromethane emissions and perfluoroethane emissions from anode effects in all prebake and all Søderberg electrolysis cells combined.

(2) Anode effect minutes per cell-day (AE-mins/cell-day), anode effect fre-

quency (AE/cell-day), anode effect duration (minutes). (Or anode effect overvoltage factor ((kg CF₄/metric ton Al)/(mV/cell day)), potline overvoltage (mV/cell day), current efficiency (%).)

(3) Smelter-specific slope coefficients (or overvoltage emission factors) and the last date when the smelter-specific slope coefficients (or overvoltage emission factors) were measured.

(d) Method used to measure the frequency and duration of anode effects (or overvoltage).

(e) The following CO₂-specific information for prebake cells:

(1) Annual anode consumption.

(2) Annual CO₂ emissions from the smelter.

(f) The following CO₂-specific information for Søderberg cells:

(1) Annual paste consumption.

(2) Annual CO₂ emissions from the smelter.

(g) Smelter-specific inputs to the CO₂ process equations (e.g., levels of sulfur and ash) that were used in the calculation, on an annual basis.

(h) Exact data elements required will vary depending on smelter technology (e.g., point-feed prebake or Søderberg) and process control technology (e.g., Pechiney or other).

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